



**Efforts to Increase Student Learning Results with
Cooperative Learning Type Learning Model *Think Pair
Share* on the Cube and Beams Materials in Class VIII
SMP Kartika I-1 Medan**

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Abstract

This study aims to improve student learning outcomes through the application of cooperative learning model Think Pair Share (TPS) on the material of the cube and beam in class VIII SMP Kartika I-1 Medan. This research is a collaborative and participative action research class (PTK) conducted in 3 cycles consisting of 3 meetings. The subject of this study were 30 students in grade VIII SMP Kartika I-1 Medan. Data collection is done by observation and test. The result of the research shows that learning mathematics with cooperative learning model type Think Pair Share (TPS) can improve student learning result on cube and beam material. This is indicated by the increase in cycle I, namely the number of students who completed as many as 17 people with classical completeness of 56.7%. In cycle II, the total number of complete students is 23 people with classical completeness equal to 76,6% and cycle III, total number of complete student is 26 people with classical completeness equal to 86,7%. Thus, it can be concluded that the implementation of cooperative learning model type Think Pair Share (TPS) can improve the ability of logical, critical and systematic thinking in solving mathematical problems so as to improve student learning outcomes.

Keywords: Student Learning Outcomes; Cooperative Learning; Learning Model; Think Pair Share; Cube and Beams.

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1. Introduction

Mathematics as one of the areas of study taught in the school, in fact experiencing various problems. One of them is the lack of students' creativity in solving problems caused by the lack of interest students repeat the math lesson that has been taught by teachers at home. The low quality of mathematics can be seen from the low student learning achievement in the mathematics subjects, the low achievement can be caused by the students themselves both in terms of cognitive ability and effective in learning mathematics.

The process of teaching and learning has a teaching strategy undertaken by teachers is still less effective. So students are less active in learning activities. Teachers tend to use lecture methods so that students feel bored and sleepy at the time of learning. Though the teaching and learning strategies on student achievement is very influential. This strategy shows the success of teachers in conducting the learning process. Then, students also tend to only listen to what is delivered by the teacher so that students also feel bored in following the lesson.

One of the models in learning that matches the character of the student is the cooperative learning model Think Pair Share (TPS). This model is one model of cooperative learning where in this model students can learn and cooperate in groups that are collaborative. As stated by [1], states that TPS technique gives students the opportunity to work alone and work with others. This technique excels in helping students find and understand difficult concepts, foster critical thinking skills and the ability to help friends as they discuss one another's problems.

Think Pair Share involves students discussing answers to questions with each other. The teacher asks the class a question and gives students a set amount time to answer the question individually. Then the teacher tells the students to turn to someone sitting next to them and discuss their answer. Students are given time to discuss their answers with their partner. If the answers differ, one partner tries to convince the other that his answer is the correct one [2].

The final study [3] compared the effects of teacher centered learning and cooperative learning on 5 the grade students' science achievement and social skills in Kuwait. Through use of a researcher created pretest posttest design with random assignment of 8 fifth grade classes, over a period of 6 weeks, science classes met 3 days a week for 45 minute lessons. Each teacher taught one cooperative learning group and one teacher centered group. Students in both settings were taught the same material and concepts in the unit. Results showed that post test scores were higher in the experimental group over the control group. Additional findings showed that even though the social skills mean pre test scores of the control group were higher than the experimental group, the social skills post test mean score of the experimental group surpassed the control group. One limitation of this study is the fact it was conducted in Kuwait, it may not be generalized to other countries in the world.

In study [4] states that: Cooperative learning models type TPS to follow the ideas of the matters by teacher, in pairs, to discuss the ideas of the matters raised by the teacher, and Share the results of discussion for all students in the class. (The cooperative learning model of TPS follows the thinking steps of the teacher problem, paired to discuss ideas from the teacher's problem, and shared the results of the discussion with all the students in the

class).

Learning can be understood as effort and practice in order to gain intelligence. Learning to be a process that takes place actively and interactively involving physical and psychic activities. According to Anthony Robbins in [5] defining learning as the process of creating a relationship between something already understood and something (knowledge) new. According to Gagne in [6], learning is a change in disposition or ability achieved by a person through activity.

Cooperative learning is a broader concept covering the type of group work including a more teacher-led or teacher-directed form. In general, cooperative learning is considered more directed by teachers, where teachers assign tasks and questions and provide materials and information designed to help learners solve problems. Roger and David Johnson in [6] said that not all group learning can be considered cooperative learning. Cooperative learning can benefit both lower and upper group students working together to accomplish academic tasks. According to Ibrahim and his colleagues in [7] cooperative learning has an effect that means a wide acceptance of racial, cultural and religious diversity.

Think Pair Share (TPS) or paired thinking is a type of cooperative learning designed to influence the interaction patterns of students developed by Frang Lyman. According [8] that Think Pair Share (TPS) is an effective way to create variations in the atmosphere of class discussion patterns. According to Lie (2008: 46) the advantages of Think Pair Share are: (1) increasing the participation of students to contribute thoughts because they feel free in expressing opinions; (2) suitable for simple tasks; (3) forming a group that is easier and faster; (4) easier interaction. Then, Think Pair Share weaknesses are: (1) many groups report; (2) fewer ideas emerge; (3) if there is a dispute, there is no mediator of the students in the group.

It can be said that the problem in the results of this study is the result of learning of low student mathematics in learning cubes and beams, the activity of students who are still lacking in the learning process, the learning model is applied is not appropriate and only centered on the teacher. The formulation of the problem is whether the application of cooperative learning model type Think Pair Share (TPS) can improve student learning outcomes on the material of cube and beam in class VIII SMP Kartika I-1 Medan. The goal is to know the improvement of student learning outcomes through the application of cooperative learning type Think Pair Share (TPS) on the material of cubes and beams. This can be said, with the formation of a discussion using cooperative learning model Think Pair Share type can facilitate students in learning mathematical concepts through a series of discussions in groups. Students are directed to work, develop themselves and take responsibility both individually and in groups. Positive competition will work will be created within the classroom in order to achieve optimal learning achievement. From the description above, the results of researchers interested in the title Improving Student Learning Outcomes With Learning Model Cooperative Learning Type *Think Pair Share* On Material Cube and Beams Class VIII SMP Kartika I-1 Lesson 2015/2016. The purpose of this study is to determine the improvement of student learning outcomes through the application of cooperative learning model *Think Pair Share* on the material of cubes and beams. The research hypothesis is by applying cooperative learning model of *Think Pair Share* type in class VIII SMP Kartika I-1 Medan, student's learning result can be improved on material of cube and beam. A mathematical learning using Think

Pair Share type can be done through several stages that begin by introducing students with a problem which then ends with the stages of presentation or presentation. Stage I: Thinking (thinking), at this stage the teacher asks the student about an ABCD cube, the teacher asks the student to think of the answer within minutes. Phase II: Pairing (pairing), the teacher asks students to pair up with other students who have been predetermined, students matching each other answers from questions given by teachers. Stage III: Sharing (sharing), the group's overall teacher to present the results of the discussion in front of the class, the teacher concludes the learning outcomes of the group discussion.

2. Research Methods

This type of research is a classroom action research (PTK). The approach taken is a qualitative approach because this research aims to improve students' mathematics learning outcomes. In accordance with research, the classroom action research has a cycle stage, namely: planning, action, observation or observation, and reflection. A reflection on the cycle I is already known where the successes and obstacles of the new action completed in one cycle. In cycle II is done in continue on cycle III. In preparing the design in cycle II and cycle III and the stage is the same as the previous cycle.

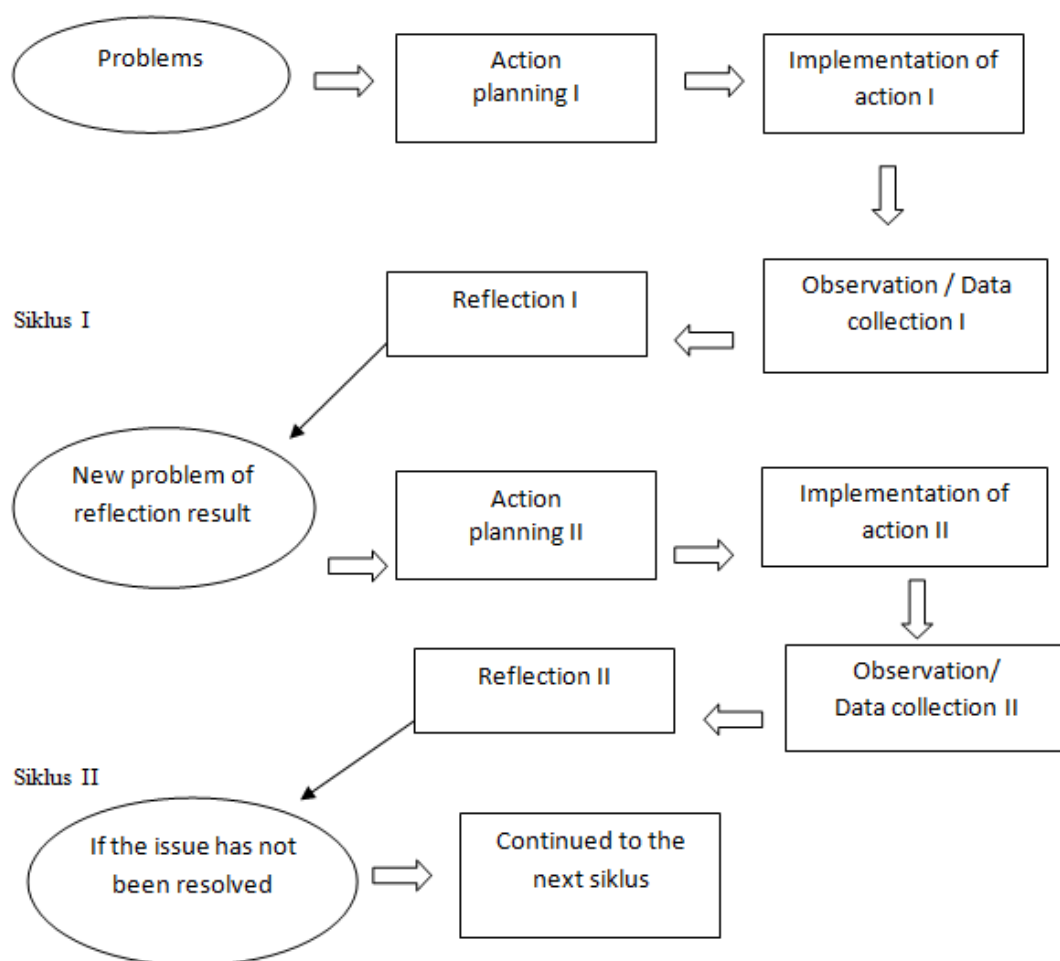


Figure 1: Classroom Action Research Flow

(Source : [9])

The subjects were 30 students of grade VIII SMP Kartika I-1 Medan. The object of research is the result of learning of class VIII SMP Kartika I-1 Medan, what is cube and block using cooperative learning model *Think Pair Share* type. Indicator in this research is test score obtained by student with cooperative learning model *Think Pair Share* type.

The validity of a test instrument is:

$$\gamma_{pbi} = \frac{M_P - M_t}{S_t} \sqrt{\frac{p}{q}} \dots\dots\dots [10]$$

Information:

γ_{pbi} = Biserial correlation coefficient

M_P = The average score of the subjects who answered correctly for the item sought validity

M_t = Average total score

S_t = Standard deviation from the total score

P = The proportion of students who answered correctly

Q = The proportion of students who answered incorrectly ($q = 1 - p$)

Level problem difficulty used formula:

$$p = \frac{B}{JS} \dots\dots\dots [10]$$

Information:

P = Test difficulty index

B = The number of students who answered the question correctly

JS = The total number of students participating in the test

Differentiating power test or index discrimination test with the formula:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = PA - PB \dots\dots\dots [10]$$

Information:

BA = Number of top group participants who solve the problem correctly

BB = Number of lower group participants who solve the problem correctly

JA = Number of top group participants

JB = Number of lower group participants

PA = Proportion of upper group participants

PB = Proportion of lower group participants

Data analysis techniques in this study focused on the level of achievement of learning outcomes from the results of student answers. A student is said to be complete when it has reached 65% and a class is said to be complete learning if the class is 85% of students who have achieved 65% absorption. It can be said that, the criteria of action as the criteria of individual completeness and classical completeness can be explained that the completeness of the individual said to be complete learning if the proportion of correct answers $\geq 65\%$ students and a class said to complete the study if there are $\geq$

85% students who have completed learning.

3. Research results

In the implementation of this research, the researcher develops the learning design which is the *Think Pair Share* cooperative learning, in which the implementation of this research runs three cycles to reach the target percentage of complete mastery of 65% which has been determined.

1. Siklus I

a. Planning

- Lesson Plans (RPP)
- Student worksheet siklus I
- Test siklus I
- Teacher observation sheet that aims to see how the learning process takes place using cooperative learning model *Think Pair Share* type

b. Implementation of Action

At the stage of giving action I in conducting teaching and learning activities where the researcher acts as a classroom teacher. Lessons learned using Cooperative Learning Model *Think Pair Share* Type.

c. Observation (Observation)

Observations made by researchers assisted by an observer, this is the beginning of the implementation of action

until the end of the implementation of the action that is in the form of teaching through cooperative learning model *Think Pair Share* type.

d. Reflection and evaluation

In general, the implementation of cycle I is in accordance with action planning. After implemented learning with cooperative learning model type *Think Pair Share*, then held a reflection on the learning that has been going on.

2. Siklus II

a. Planning

Viewed from the results of reflection on the first cycle, the researchers proceed to cycle II in order to complete any deficiencies in the previous cycle where there are obstacles fixed.

b. Implementation of Action

On siklus II implemented to correct the obstacles that occur on siklus I, the teacher is more distributing attention to the students evenly, the teacher creates a more conducive and fun learning atmosphere.

c. Observation (Observation)

At the second meeting does not vary much with the first meeting. But the teacher explained the beam frame and made the beam web and painted the beam webs. In closing activities, the teacher said that at the next meeting there will be a test siklus II against students to measure the extent to which the ability of students.

3. Siklus III

a. Planning

Judging from the results of reflection on siklus II, then the researcher proceeds to siklus III to supplement any deficiencies in previous cycles where there are obstacles fixed. Evaluation is done that the teacher more to increase supervision to student to create conducive learning atmosphere and teacher give more motivation to student to pay attention to teacher explanation and pay attention to every pair which go forward. Judging from the results of reflection on siklus II, then the researcher proceeds to siklus III to complete any deficiencies in the previous siklus. Then, the results of interviews on mathematics teachers, obtained some problems that can be faced in studying cubes and beams. Based on the problems experienced by students on the material of cubes and beams, the researchers tried to overcome through cooperative learning model *Think Pair Share* type conducted three siklus.

On siklus I, students are given learning by applying cooperative learning model *Think Pair Share* type. In this cycle the teacher invites students to discuss together with partner in working Sheet Student (LKS). On siklus II and siklus III, given the learning by applying cooperative learning model type *Think Pair Share*. At the end

siklus II and siklus III given the test results of learning II and III to find out how far the student's ability on the material.

To determine the test level used criteria below:

0,80	$< r \leq 1,00$	strong validity (very high)
0,60	$< r_{xy} \leq 0,80$	High validity
0,40	$< r_{xy} \leq 0,60$	validity is enough
0,20	$< r_{xy} \leq 0,40$	the validity is very low

Table 1: Test Test Data Before Validity

No	Siklus I		Siklus II		Siklus III	
	r_{hitung}	Ket	r_{hitung}	Ket	r_{hitung}	Ket
1.	0,09	TV	0,17	TV	Tak terdefenisi	TV
2.	0,09	TV	0,38	V	-0,67	TV
3.	0,48	V	0,18	TV	0,51	V
4.	-0,28	TV	0,46	V	0,39	V
5.	0,38	V	0,46	V	0,03	TV
6.	0,39	V	0,70	V	0,66	V
7.	0,14	TV	0,56	V	0,62	V
8.	0,23	TV	0,51	V	0,39	V
9.	0,23	TV	0,54	V	0,74	V
10.	0,42	V	-0,09	TV	0,74	V
11.	0,41	V	0,40	V	0,45	V
12.	-0,07	TV	0,50	V	-1,08	TV
13.	0,37	V	0,08	TV	0,21	TV
14.	0,43	V	0,20	TV	-0,35	TV
15.	0,50	V	0,38	V	0,56	V
16.	0,39	V	0,43	V	0,40	V
17.	0,39	V	0,33	TV	0,12	TV
18.	0,41	V	0,25	TV	-0,15	TV
19.	0,09	TV	-0,15	TV	0,20	TV
20.	0,42	V	0,03	TV	-2,96	TV

Information:

$r_{tabel} : 0.36$; T = Invalid ; V = Valid

Table 2: Results Siklus I, Siklus II and Siklus III

Siklus I	Siklus II	Siklus III
56,7 %	76,6 %	86,7 %

Based on the results and discussion of this study, obtained as follows:

- a. On siklus I, the number of students who completed the total of 17 people with classical completeness of 56.7%. In siklus II, the total number of students who completed 13 people with classical completeness of 76.6%. And on the third siklus, the number of students who completed 26 people with classical completeness of 86.7%.
- b. Based on the test of learning result I, the test of learning result II, and the test of learning result III that the learning by applying cooperative learning model of *Think Pair Share* type can improve students ability in applying mathematics concept which can improve student learning result.
- c. These results indicate that students' abilities have improved based on the value of individual mastery and classical completeness.

4. Discussion

Psychological theory that supports this research is Piaget Theory is very supportive in the implementation of cooperative learning model that will be tested in junior high school Kartika I-1 Medan is cooperative learning type *Think Pair Share* to see cooperative learning on the material of cubes and beams. Because when students are in groups to complete school tasks then the social interaction that they have got to improve learning achievement, especially on the cognitive aspect. A relevant research result is the results of previous studies that are similar to the research to be performed. There are several research results that are relevant to the research that researchers are doing, among others by [11] who states the result of this study are: (1) there were effects of interaction between cooperative learning models (TPS and NHT) and learning motivation on mathematics learning achievement, (2) the mathematics learning achievement of students with high level of learning motivation who were taught using TPS model is higher than those who were taught using NHT, and (3) the mathematics learning achievement of the students with low level learning motivation who were taught using TPS model is insignificantly different than those who were taught using NHT. The empirical finding is confirmed by [12] who declares increase student learning thoroughness of the first cycle to the second cycle. If the first cycle the number of pupils who achieve complete category amounted to 28 people or 68.3 per cent, then the second cycle of the entire student has managed to achieve complete category. It can be concluded that the application of learning models Number Head Together has a role in improving student learning outcomes. It also similar to [13] who states the result the application of cooperative learning type TPS can improve the results of learning economics / accounting in class XI IPS 5 SMA Negeri 2 Surakarta Lesson Year 2009 / 2010. It is supported by facts as follows: (1) Student activity in apperception increased by 14%. The results are shown in cycle 1 of 58% (21 students) and on cycle 2 of 72% (26 students); (2) Activity of students in joining cooperative type study of TPS increased by 16%. The results are shown in cycle 1 of 61%

(22 students) and in cycle 2 of 77% (28 students); (3) Student activity in pair / group discussions increased by 20%. The results are shown in cycle 1 of 61% (22 students) and on cycle 2 of 81% (29 students); (4) Learning result completeness increased by 15%. The results are shown in cycle 1 of 68% (23 students) and in cycle 2 of 83% (29 students); (5) The students' activity in the discussion has the greatest improvement compared with the activity and the completeness of the students' learning achievement.

5. Conclusion

Based on the data of the research implementation, through teaching and learning process by applying cooperative learning model of *Think Pair Share* type on the subject of cube and beam of class VIII SMP Kartika I-1 Medan, can improve student learning outcomes. This can be seen from the increase of the siklus I to siklus III. In the first siklus, the number of students who complete the 17 people with low classical completeness. In siklus II, the total number of students completed as many as 23 people with the classical completeness is still low as well. And in the siklus III, the number of students who completed 26 people with classical completeness is high and reach the criteria of classical completeness. In the siklus III has been achieved the criteria of classical completeness $\geq 85\%$. Based on data observations made in siklus I, the data obtained that researchers are still less able in managing the class so that there are still students who have not been able to undergo the learning process resulting in the value obtained by students still low. In the second cycle of observation, the data obtained that the researchers are better able to manage the class than in the first cycle so that there is an increase in student activity. So it has an impact on the value of some students. On the results of observation siklus III, the data obtained that the researchers have been able to manage the class and implement cooperative learning model type *Think Pair Share* with as much as possible so that in siklus III has reached the criteria of classical completeness $\geq 85\%$.

6. Suggestions

Suggestions for teachers, who want to apply cooperative learning model *Think Pair Share* type to give attention to students. For students, the implementation of cooperative learning model type *Think Pair Share* can improve logical thinking ability, critical and systematic in solving mathematics problems so as to improve student learning outcomes in class VIII SMP Kartika I-1 Medan. For schools, should support student learning facilities and infrastructure and school environment to be fun. Teachers should apply various learning methods and provide opportunities for students to be active in the learning process, because it can create a fun learning process and improve student learning motivation, in addition teachers should provide various types of questions with evenly so that students can improve their understanding And train them to use formulas for various problems encountered.

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